IN THE SPECIFICATION

Please amend paragraph 0004 by inserting the following text as follows:

[0004] Similar problems can be encountered in a number of semiconductor processes that use vacuum pumps, especially those in the chemical vapour deposition (CVD) category 200 shown for example in Fig. 10. Such processes can produce a significant amount of by-product material 202. This can be in the form of powder or dust, which may remain loose or become compacted, or in the form of hard solids, especially if the process gas is condensable and sublimes on lower temperature surfaces. This material can be formed in the process chamber 201, in the foreline 204 between the chamber and the pump, and/or in the vacuum pump 203 itself. If such material accumulates on the internal surfaces of the pump during its operation, this can effectively fill the vacant running clearance between the rotor and stator elements on the pump, and can also cause spikes in the current demand on the motor of the vacuum pump. If this continues unabated, then this build-up of solid material can eventually cause the motor to become overloaded, and thus cause the control system to shut down the vacuum pump. Should the pump be allowed to cool down to ambient temperature, then this accumulated material will become compressed between the rotor and stator elements. Due to the relatively large surface area of potential contact that this creates between the rotor and stator elements, such compression of by-product material can increase the frictional forces opposing rotation by an order of magnitude.

Please amendment paragraph 0010 by inserting the following text as follows:

[0010] The pump may be a screw pump 30a comprising two threaded rotors in which case the port(s) may be located after the first two complete turns of thread of the rotors from the inlet end of the rotor. Alternatively the pump may be a Northey ("claw") pump 30b or a Roots pump 30c as

shown in Fig. 5 to include an arrangement for supplying fluid to a pump in accordance with the present invention.

Please amend paragraph 0014 by inserting the following text as follows:

[0014] The invention thus extends to chemical vapour deposition apparatus 32 comprising a process chamber 31 and a pump according to any preceding claim for evacuating the process chamber, wherein, in use, the deposits are a by-product of a chemical vapour deposition process.

Please amend paragraph 0017 by inserting and deleting the following text as follows:

[0017] Referring to Fig. 6, ~~The~~ the delivery of fluid may occur at predetermined intervals during operation of the pump, for example, using solenoid valve control. Furthermore a monitoring step 100 may be performed wherein the performance of the pump is monitored, for example, by measuring at least one of the group of rotor speed, power consumption, and volumetric gas flow rate. These measured parameters may be used to determine the extent of accumulation of deposits on the internal working surfaces of the pump 101. A fluid flow rate may then be calculated, this rate being that of the delivered fluid that would be sufficient to compensate for the quantity of accumulated deposits 102 as determined above. Subsequently, the flow rate of fluid being delivered to the rotor may be adjusted 103 to reflect the new calculated value.

Please amend paragraphs 0018-0022 by inserting and deleting the following text as follows:

[0018] Referring to Fig. 7, ~~According~~ according to the present invention there is further provided a method for managing deposits within a pump mechanism by introducing fluid suitable for dissolving, diluting or otherwise disengaging deposits which have accumulated on the internal working surfaces of the pump, the method comprising the steps of:

[0019] (a) monitoring the performance of the pump 110, for example, by recording at least one of the group of rotor speed, power consumption, and volumetric gas flow rate;

[0020] (b) calculating the rate of accumulation of deposits on the internal working surfaces of the pump based on the monitored performance 111;

[0021] (c) calculating a fluid flow rate required to compensate for the accumulation of deposits as determined in step (b) 112; and

[0022] (d) effecting an adjustment of the flow rate of fluid being delivered to the rotor to reflect the calculated value from step (c) 113.

Please amend paragraph 0023 by inserting and deleting the following text as follows:

[0023] The pump may be inoperative as the fluid is delivered, for example where seizure has occurred or where cleaning needs to take place. Referring to Fig. 8,[[In]] in this case, the method may further involve applying torque 114 to the rotors of the pump in order to overcome any remaining impeding force potentially caused by deposits located on the internal working components of the pump. Under certain conditions, for example where the material being transported is particularly viscous or waxy and this viscosity may reduce with an increase in temperature, the method may further involve the introduction of thermal fluid 115 into a cavity provided within the housing of the pump, where this cavity encircles the rotor components. This thermal fluid may be heated 116 in order to raise the temperature of the fluid and the deposits sufficiently to release the deposits prior to applying the torque as discussed above. (Figure 9).

Please amend paragraph 0032 by inserting and deleting the following text as follows:

[0032] In the example of FIG. 1, two rotors 1 are provided within an outer housing/stator 5 ~~that~~ where the outer housing serves as the stator of the pump. The two contra-rotating, intermeshing rotors 1 are positioned such

that their central axes lie parallel to one another. The rotors are mounted through bearings 10 and driven by a motor 11 (shown in FIG. 2). Injection ports 2 are provided along the length of the rotor, in the examples of FIGS. 1 and 2 (shown as solid lines in FIG. 3) these ports 2 are located laterally within the pump on the opposite side of the rotors from the intermeshing region of the rotors. However, the ports may be positioned at any radial location around the outer housing/stator 5. Some of these locations are illustrated in FIG. 3.

Please amend paragraph 0033 by inserting and deleting the following text as follows:

[0033] The ports 2, which may contain nozzles 2a to allow the fluid to be sprayed, are preferably distributed along the length of the outer housing/stator ~~component~~ 5 such that the solvent or steam can be easily applied over the entire rotor. Alternatively, this distribution of ports allows the fluid to be readily concentrated in any particular problem area that may arise. This is especially important when solvent is injected during operation, in order to limit the impact on pump performance. If, for example, a single port was to be used at the inlet 3 of the pump, this may have a detrimental effect on the capacity of by-products that could be transported away from the evacuated chamber (not shown) by the pump. By bringing solvent into contact with the rotor 1 after the first few turns of the thread, the likelihood of backward contamination of the solvent into the chamber will be reduced.

Please amend paragraph 0034 by inserting the following text as follows:

[0034] Furthermore, where solvent is introduced in the inlet region of the pump, the pressure is such at the inlet that there is an increased risk that the solvent will flash. In processes where it is necessary for the solvent to remain in liquid phase the solvent must be introduced closer towards the exhaust region of the pump where the pressures will have risen. As solvent is introduced through a number of ports 2 along the length of the

outer housing/stator 5, the overall effect is to gradually increase the quantity of solvent present, as the likelihood of residue build up on the rotor 1 increases towards the exhaust stages. An additional benefit may be seen in some configurations where addition of liquid into the final turns of thread of the rotor will act to seal the clearances between the rotor and the stator in this region of the pump. Thus leakage of gas will be substantially reduced and performance of the pump will be improved.

Please amend paragraph 0036 by inserting the following text as follows:

[0036] Delivery of fluid may be performed through simple ports as liquid is drip-fed through a hole in the housing or nozzles 2a may be provided through which the fluid may be sprayed. Control systems may be introduced such that the solvent delivery can be performed in reaction to the changing conditions being experienced within the confines of the pump apparatus. For example, in the arrangement shown in FIG. 5, a control system 20 supplies cleaning fluid, for example, stage by stage, to the ports 2 of pump 21 via supply conduits 22. As indicated at 24, a purge gas system may also be provided for supplying a purge gas, such as nitrogen to the pump 21.

Please amend paragraph 0039 by inserting and deleting the following text as follows:

[0039] The outer housing/stator 5 as illustrated in FIG. 3 is provided as a two-layer skin construction, an inner layer 6a and an outer layer 9. It is the inner layer 6a that acts ~~as~~ to define the stator cavity 6 of the pump. A cavity 7 is provided between the layers 6a and[[,]] 9 of the outer housing/stator 5 such that a cooling fluid, such as water, can be circulated around the stator in order to conduct heat away from the working section of the pump. This cavity 7 is provided over the entire length of the rotor i.e. over the inlet region 3 as well as the exhaust region 4. Under circumstances where the pump has become seized due to cooling of the rotor which, in turn, solidifies residues on the surfaces between the rotor

and the stator, the `cooling liquid` in the cavity 7 of the outer housing/stator 5 may be heated to raise the temperature of the rotor 1. This can enhance the pliability of the residue and may assist in releasing the mechanism. The outer housing/stator 5 is provided with pillars 8 of solid material through the cavity 7 in order to provide regions where injection ports 2 can be formed.

Please amend paragraph 0041 by inserting and deleting the following text as follows:

[0041] In summary, a pump comprises at least one rotor 1, a stator/ ~~5 and a~~ outer housing 5, the rotor 1 being enclosed by the outer housing/stator 5. The outer housing/stator 5 comprises at least one port 2 extending through the outer housing/stator 5 to enable delivery of a fluid directly onto a surface of the at least one rotor 1.